

AN INTERESTING NEW WATER STRIDER FROM FORMOSA

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ONE PLATE

During a trip to Formosa, I made a collection of insects on September 25, 1921, at Sôsan near Taihoku, with Mr. Ryoichi Takahashi, of the section of applied zoölogy, Department of Agriculture, Government Research Institute of Formosa. In the collection I have found a species of the family Gerridæ, interesting both systematically and ecologically. A small number of the same species, moreover, were captured by us at Shinten near Taihoku, several days later; also two specimens, collected by the late I. Nitobe at Kusukusu near Kôshun, were found in the collection kept at the Government Research Institute of Formosa in Taihoku. This insect was subsequently found to be new to science, and to belong to a new genus.

Genus **RHYACOBATES** novum

Head longer than broad between eyes, the latter being moderately emarginate interiorly; portion of head in front of eyes extended and longer than rest of head, almost pentagonal in shape; antennæ not longer than body, with first joint much longer than the three other joints together, second and fourth joints subequal in length, third slightly longer; rostrum scarcely passing anterior coxæ.

Pronotum much shorter than head, anterior margin straight, posterior slightly concave; mesonotum about three times as long as pronotum; anterior femora thickened and longer than tibiæ, the last with a distinct apical spine; intermediate and posterior femora about subequal in length, very slender, a little shorter than twice the length of intermediate tibiæ in the former, while in the latter about three times as long as posterior tibiæ. Intermediate tibiæ with a fringe of long hairs. First intermediate tarsal joint about eight times the length of second; posterior

tarsal joint very short, the second being slightly longer than the first; all these tarsi without claws.

In the female, abdomen with the lateral margins rolled up and sometimes in contact with each other at the central axis, so that the morphological dorsal side of the abdomen is invisible; anal segment forming a thin-walled tubelike structure with lateral sides pointed posteriorly.

Type, *Rhyacobates takahashii* sp. nov.

This genus is somewhat allied to *Jucundus* Distant, but differs from it in the shape of the head, the considerable length of the first joint of the antennæ and of the intermediate and posterior femora, the apical spine of the anterior tibiæ, the fringe of long hairs on the intermediate tibiæ, the structure of the intermediate and posterior tarsi, and the peculiar abdominal structure in the female. Only the apterous form is known.

Rhyacobates takahashii sp. nov. Plate 1.

Head longer than broad between the eyes, dark brown above, pale yellowish brown beneath, with a somewhat fork-shaped central black fascia on vertex which is bifurcate posteriorly; eyes large, prominent, and black, antennæ not longer than body, black, with first joint slightly thicker and much longer than the three other joints together, second and fourth joints subequal in length, third slightly longer; rostrum scarcely passing anterior coxæ, with apex of third segment and entire fourth segment black.

Pronotum much shorter than head, anterior margin straight, posterior slightly concave; shining black above with a large central brown spot touching posterior margin; prosternum pale yellowish brown, posterior lateral sides silver gray pubescent. Meso- and metanotum together somewhat globose, shining black, with a longitudinal dark brown fascia and somewhat indistinct lateral silver gray striæ, posterior ends of striæ somewhat thickened on mesonotum, and a thin silver gray stria on the central axis of metanotum. Meso- and metasternum silver gray, thickly pubescent.

Anterior acetabulæ, coxæ, trochanters, and femora brown; a spot on the acetabulæ, apical end of trochanters, and two longitudinal lines on anterior and lateral sides of femora black; tibiæ and tarsi black, base of former brown. Trochanters coarsely downy; femora very much thickened, much longer than tibiæ, the last with a distinct apical spine; first tarsi distinctly longer

than second in male, and the former almost twice as long as the latter in the female; claws inserted before apex of tarsi. Intermediate and posterior coxæ, trochanters, and basal one-third of femora brown; rest of femora, tibiæ, and tarsi black; intermediate and posterior femora about subequal in length, very long and slender, the former being about twice as long as the intermediate tibiæ and the latter about three times the length of the corresponding ones; intermediate tibiæ with a fine fringe of long hairs, though somewhat indistinct in the dried specimens; tarsi very much thinner than tibiæ, without claws; first intermediate tarsal joint about eight times as long as second; posterior tarsi very short, second joint slightly longer than first.

Abdomen in male somewhat shining black above; apex of genital segment and below brown, the latter somewhat silvery pubescent; in the female the end of abdomen turns upward markedly, the morphological dorsal side scarcely visible, as the ventrolateral sides roll up considerably. The apparent dorsal side except anal segment black with silver pubescence, ventral side and anal segment pale brown with similar pubescence; anal segment thin walled, forming a tubelike structure, its upper margin black and the lateral sides pointed posteriorly. Length of body, male, 6.5 millimeters; female, 9.5.

Holotype, female,¹ captured at Sôsan near Taihoku on September 25, 1921, by T. Esaki, allotype, male, paratypes, and paradiotypes from Shinten near Taihoku are all in my collection. There are also two specimens from Kusukusu near Kôshun in the collection of the section of applied zoölogy, Department of Agriculture, Government Research Institute of Formosa in Taihoku.

This species is named in honor of my friend Mr. R. Takahashi, to whom I acknowledge indebtedness for many favors.

This curious water strider was found at first on a very rapid stream in a rocky ravine at Sôzan. The insects glide swiftly on the surface of the water in all directions and are hardly recognizable owing to the disturbance of the water. They look, however, somewhat like whirligig beetles. Some of them were found climbing on the rocks near by. Numbers of specimens in copula were also captured. Numerous examples were found on the Shinten River which is a very much larger stream than

¹ I purposely took a female as holotype, because some important generic characters are represented only in that sex.

the Sôzan. Here also they live on a rapid current, but at Shinten only the males and the nymphs of the last instar were found. The nymphs were not seen at Sôzan.

The considerable length of the first joint of the antennæ and of the intermediate and posterior femora has been acquired in all probability as an adaptation to the habitat of this insect. The fringe of long hairs on the intermediate tibiæ seems of service in keeping the insect from getting wet. This character is also found in *Halobates*, which inhabits the sea. In the females of *Ptilomera*, a similar fringe occurs on the intermediate femora. The peculiar abdominal structure in the female of this insect seems to have some adaptive significance to its life on running water; at copulation the rolled-up lateral margins firmly clasp the abdomen of the mate on the back. The copulatory organs of both sexes are entirely enveloped by the tube-like anal segment of the female. The insects when captured in copula and placed in a small vial continue the act for a fairly long time, contrary to any other species of the Gerridæ known to me.

ILLUSTRATION

PLATE 1. RHYACOBATES TAKAHASHII SP. NOV.

- FIG. 1. Female.
2. Head of female, lateral view.
3. Antenna.
4. Anterior leg of female.
5. Intermediate tarsus.
6. Posterior tarsus.
7. Abdomen of male, dorsal view.
8. Hinder part of abdomen of female, lateral view.

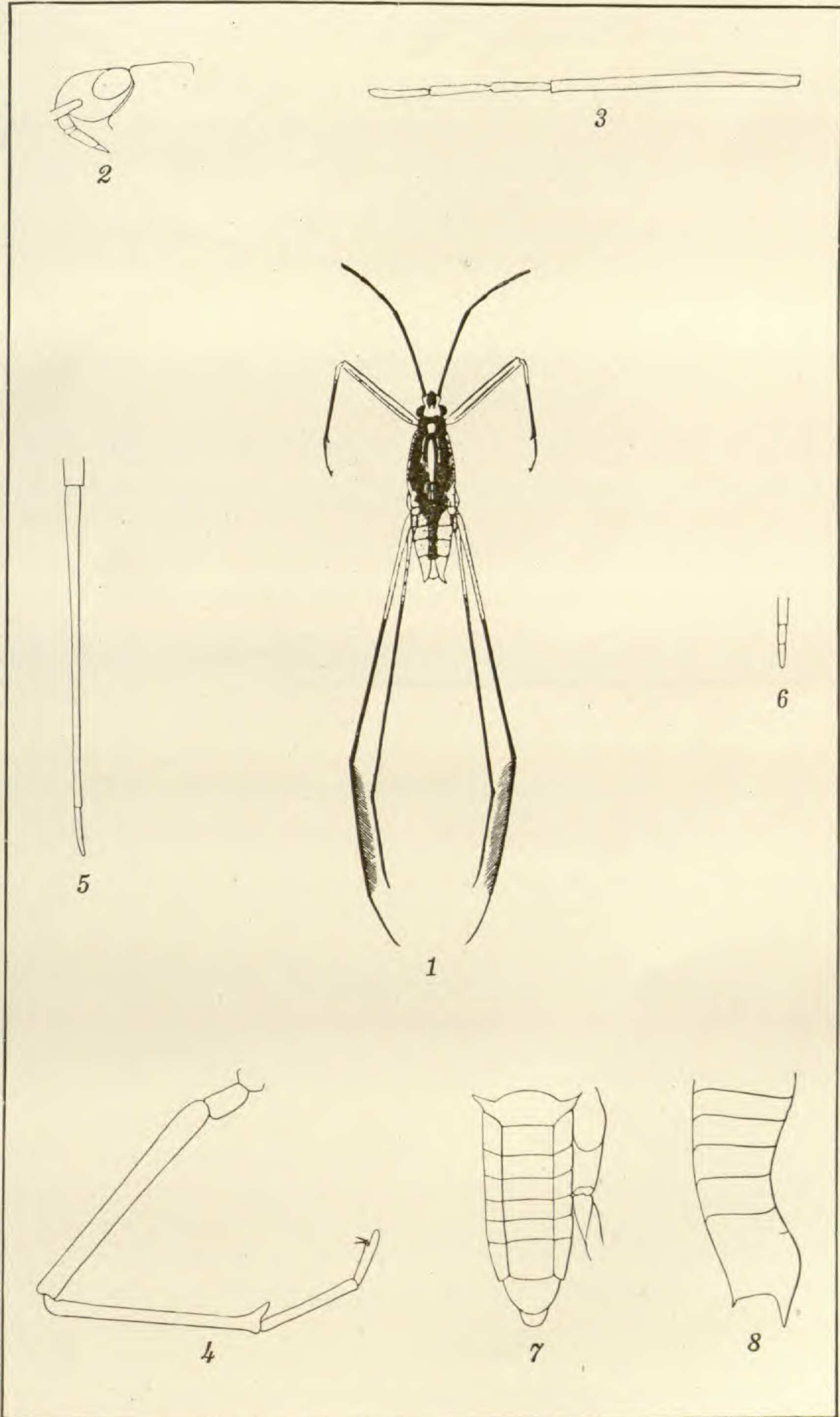


PLATE 1. RHYACOBATES TAKAHASHII G. ET SP. NOV.